

Local Service Organization Service Manual

BE INSPIRED

SL55

SIEMENS COMMUNICATIONS UNLIMITED



V1.0

Our innovation shapes the future

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1 GPRS (GENERAL PACKET RADIO SERVICE)

GPRS is a new non-voice value added services that allows information to be sent and received across a GSM mobile telephone network. It supplements today's Circuit Switched Data (CSD) and Short Message Services (SMS). GPRS involves overlaying a packet based air interface on the existing circuit switched GSM network. This gives the option to use a packet-based data service. The information is split into separated but related "packets" before being transmitted and reassembled at the receiving end. Theoretically, maximum speeds of up to 171.2 kilobits per second (kbps) are achievable with GPRS using all eight timeslots at the same time. This is about 3 times as fast as the data transmission speed possible over today's fixed telecommunications networks and 10 times as fast as current Circuit Switched Data services on GSM networks.

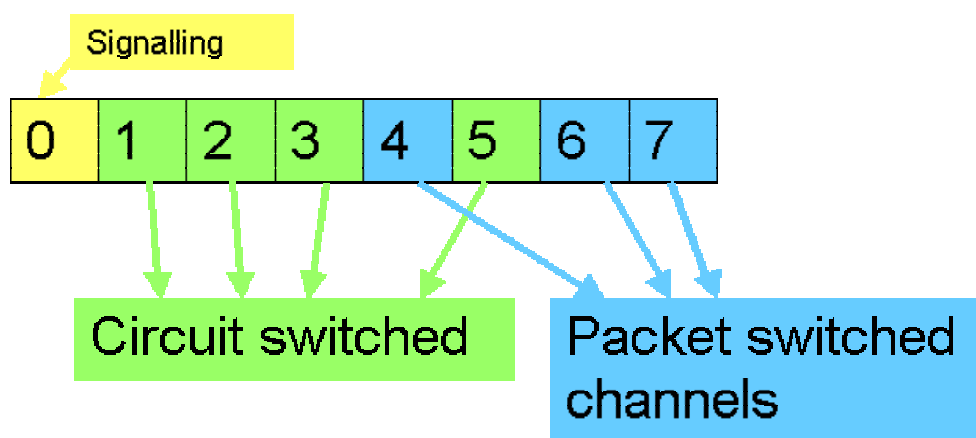


Figure1. Example of GPRS data transmission

Example: Cell with 1 Frequency channel:

1 physical channel for signaling, 4 physical channels for Circuit switched and 3 physical channels for Packet switched.

2 K-JAVAAPPLICATION

Java-based game system		
Java Application Manager (JAM)	<p>Application launcher and download manager.</p> <p>Supports HTTP-based OTA download of applications over GPRS and CSD.</p>	yes
RAM for Java applications	<p>Available RAM for Java applications (ie. program code and data) during application runtime:</p> <p>Minimum: 100 Kbyte (Has to be taken as working assumption for application development.)</p> <p>Goal: 145 Kbyte as SL45i (not committed)</p>	yes
MIDP 1.0, CLDC 1.0	As SL45i, including performance optimizations from SL45i-Infusio.	yes
'OEM extensions'	Proprietary API extensions as SL45i. Including 'Siemens Game API'	yes
HTTP API over GPRS	SL45i: only over CSD	yes

3 Key Features

Design	<ul style="list-style-type: none"> • Slider Phone
Bands	<ul style="list-style-type: none"> • GSM/GPRS 900/1800/1900 MHz (GPRS CL.8)
Battery	<ul style="list-style-type: none"> • Li-Polymer Battery Pack • Nominal Voltage : 3.6V • Nominal Capacity : typ. 500mAh • GSM Capacity : typ. 500mAh • Power Input : 1.8A (0.6ms) / 0.2A (4ms) • Cut-off Threshold : 3.2V
Stand-by Time	<ul style="list-style-type: none"> • Approx. 200 h / Li-Polymer (measured at BSPAMFRMS = 9; number of neighbouring cells = 0)
Talk Time	<ul style="list-style-type: none"> • Best case approx. : 4 hours (lowest output level with DTX) • Worst case approx. : 1.5 hours (highest output level with DTX) <p>Condition for DTX : 40% user talk time</p>
SIM Card	<ul style="list-style-type: none"> • Small (= "Plug In") 1.8V or 3V SIM card (Phase II) • To insert the SIM card, the battery pack must be removed. • The SIM reader coding will be realised by inside the card reader.
GSM Antenna	<ul style="list-style-type: none"> • A triple band antenna will be an integral part of the mobile phone.
Receiver Sensitivity	<ul style="list-style-type: none"> • EGSM: -102 dBm (-104dBm-15.2) (Specification; static & with fading) • PCN : -102 dBm (Specification; static & with fading) • PCS : -102 dBm (Specification; static & with fading) <p>The reception sensitivity must comply with the corresponding GSM recommendations in all operating conditions (temperature, battery level ...).</p>

	<ul style="list-style-type: none"> • EGSM: measurements according typical sensitivity are not yet available. • PCN: measurements according typical sensitivity are not yet available • PCS: measurements according typical sensitivity are not yet available. <p>Measurement values have to be specified separately, because SL55 will not have a coax-connector.</p>
Transmitter Power	<ul style="list-style-type: none"> • EGSM: nominal 2W (Specification: Class 4 Mobile phone) • PCN: nominal 1W (Specification: Class 1 Mobile phone) • PCS: nominal 1W (Specification: Class 1 Mobile phone) <p>Transmitter output characteristics are according to GSM 51.010 specification implying all specified operating conditions (temperature, battery level ...).</p>
Speech Coder	<ul style="list-style-type: none"> • Full Rate, Enhanced Full Rate, Adaptive Multi Rate and Half Rate speech coders are available as standard.
Temperature Range	<ul style="list-style-type: none"> • -10°C to +55°C (Normal operation) • -30°C to +85°C (Storage capability)
Display	<ul style="list-style-type: none"> • Type: Full Graphic • Resolution: 101 x 80 Pixel • Technology: Colour STN • Active area / mm: 30.3 x 24.0 • Illumination: 2 White LED • Contrast: Adjustable
Keypad (upper side)	<ul style="list-style-type: none"> • Soft-key block • Send- / End-Key (on / off) • 2 soft keys • 4-way navigation key designed as centred rocker type.

	<ul style="list-style-type: none">• Bridgeless• White Illumination• Printed lettering in three colours• Orientation at key “5”
Keypad (lower side)	<ul style="list-style-type: none">• 12-digit block (0-9, #, *)• Bridgeless• White illumination
Side Key	<ul style="list-style-type: none">• 3 keys• Record + loudness, menu-scroll
Acoustics	<ul style="list-style-type: none">• Comfortable earpiece with optimal acoustics• Unidirectional microphone• Loud signal emitter with “Hong Kong” melody and highest volume level• X different call melodies + Y melodies either with internal melody composer• All melodies and sounds with increasing volume because of the possible hands-free mode• Four different and one increasing volume level?
Midi Sound	<ul style="list-style-type: none">• Midi-files possible, 16 voices

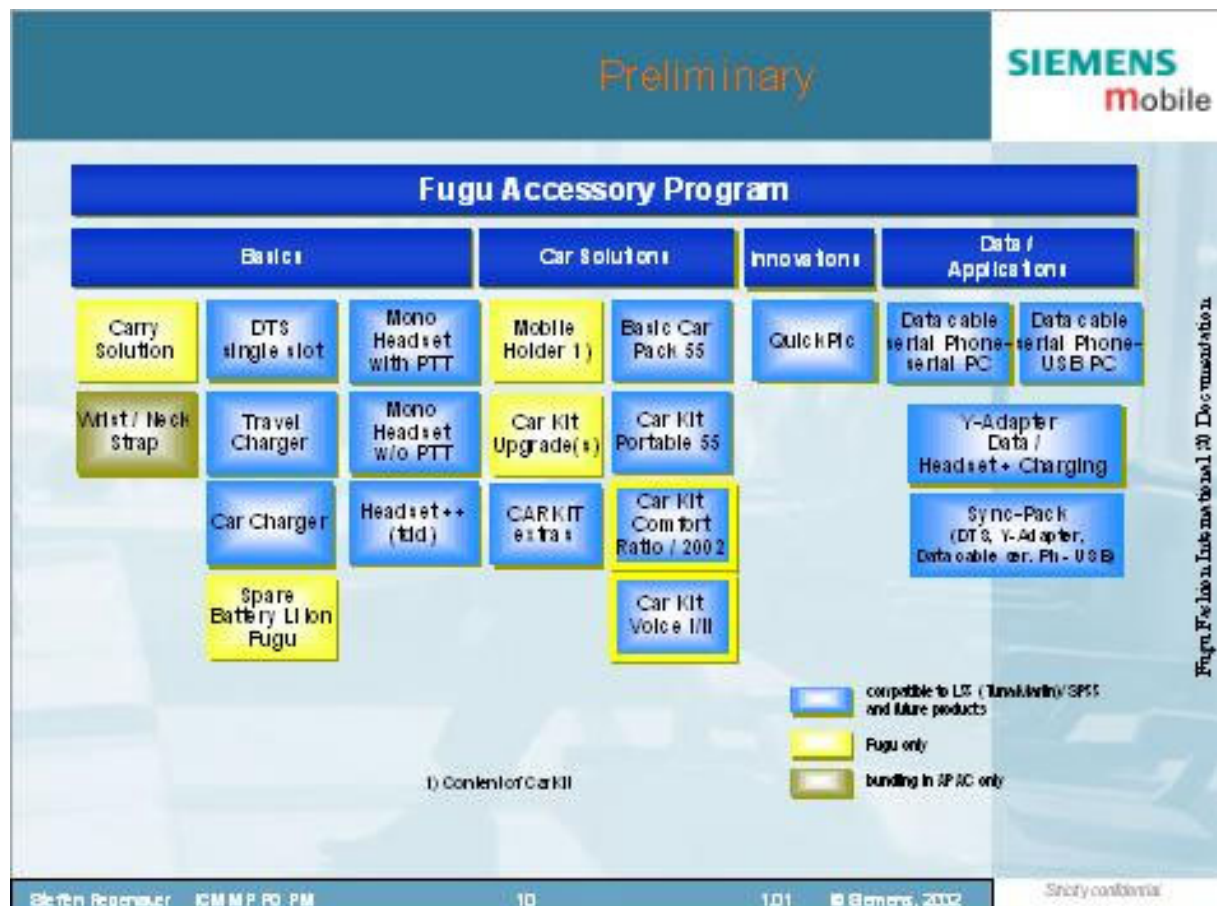
4 Comparison with Previous Product

Feature	SL45	ME45/S45	S55	SL55
Supported Systems	Dual Band E-GSM 900 / GSM 1800	Dual Band E-GSM 900 / GSM 1800	Triple band E-GSM 900 /1800/1900	Triple band GSM 900 /1800/1900
Stand-by Time	Up to 200 h	Up to 270 h	Up to 250 h	Up to 200h
Talk Time	Up to 4 h	Up to 5 h	Up to 6 h	Up to 3,5 h
Battery Type / Capacity	LI-Thin 540 mAh	LI-Ion Battery Pack Nominal Cap.: 840 mAh	LI-Ion Battery Pack Nominal Cap.: 750 mAh	LI-Polymer Battery Pack Nominal Cap.:xxxxx
Weight	approx. 85 g	approx. 99 g (ME45) approx. 93 g (S45)	Approx. 95 g	Approx. 75 g
Volume	approx. 69 cm ³	approx. 76 cm ³ (ME45) approx. 69 cm ³ (S45)	Approx. 69 cm ³	Approx. 63 cm ³
Length	105 mm (without external antenna)	108,9 mm (ME45) 108,9 mm (S45)	101 mm	81,6mm
Width	42 ... 46 mm	42.5 ... 45.5 mm (ME45) 42.0 ... 45.9 mm (S45)	42.0 ... 46.0 mm	44,5mm
Thickness	Approx. 17 mm	19.5 ... 20.5 mm (ME45) 18.4 ... 19.5 mm (S45)	17.5 ... 18.9 mm	21,9mm
SIM	Plug-In 1.8V/3V	Plug-In 1.8V/3V	Plug-In 1.8V/3V	Plug-In 1.8V/3V
Antenna	Fixed PCB	Integrated	Integrated	Integrated
Antenna Perform. relative to C25	-0,4 dB @ 900 MHz -0,3 dB @ 1800 MHz (painted upper case)	-0,4 dB @ 900 MHz -0,5 dB @ 1800 MHz	-0.4 dB @ 900 MHz -0,3 dB @ 1800 MHz -0,3 dB @ 1900 MHz compared to S40	SL55 28,3dBm – GSM900 26,1dBm – GSM1800 25,2dBm – GSM1900 S40 29,6dBm – GSM900 25,3dBm – GSM1800 25,4dBm – GSM1900 T68 Ericsson 29,7dBm – GSM900 25,8dBm – GSM1800 24,6dBm – GSM1900 T66 Ericsson 27,4dBm – GSM900 23,5dBm – GSM1800 25,4dBm – GSM1900 Nokia8810 25,2dBm – GSM900 C55Tuna 29,2dBm – GSM900 27,2dBm – GSM1800 cw26– GSM1900 Measurement equipment done in MchG
SAR related to 1 g	-	1.5 W/kg @ 900 MHz 0.8 W/kg @ 1800 MHz	1.0 W/kg @ 900 MHz 0.8 W/kg @ 1800 MHz 0.8 W/kg @ 1900 MHz	0.8 W/kg @ 900 MHz 0.8 W/kg @ 1800 MHz 0.8 W/kg @ 1900 MHz
Half Rate	Yes	Yes	Yes	Yes
Enhanced Full Rate	Yes	Yes	Yes	Yes
AMR	No	No	Yes	Yes
Fax/Data	Yes	Yes	Yes	Yes
GPRS	No	Yes, class 8	Yes, class 8 class 10 tbc until S2	Yes, class8
Keypad Illum.	Yes	Yes	Yes, blue LED	yes
Display / Display	FSTN full dot matrix, 6 lines graphic + icons /	FSTN full dot matrix, 6 lines graphic + icons /	CSTN full dot matrix, 6 lines graphic + icons /	4K colour STN full dot matrix, 6 lines graphic + icons white
Illumination	amber	amber	white	
Ringer volume level	min. 95 dB(A) @ 5 cm	Min. 95 dB(A) @ 5cm Typ. >100 dB(A) @ 5cm	Min. 95 dB(A) @ 5cm Typ. >100 dB(A) @ 5cm see comment below acoustics7.2.3	

5 Accessories

Note: Due to the changes on the connector from “Lumberg” to “Slim Lumberg”, accessories using the previous “Lumberg” connector are unable to be used on the “Slim Lumberg” platform.

For the SL55, the following accessories will be available.



5.1 Interface SL55 to accessories

The I/O Connector of SL55 is the new slim Lumberg (identical to S55/57, C55/2128 and A55).

It is the only electrical interface to the Accessories (no RF – connector). Also it has only one mechanical interface which is integrated in the design parts.

5.2 Accessories Part Numbers

Part #	Name
L36104-F3090-X903	Handsfree Loudspeaker S45/ME45/M50/MT50/C45/M45/C55
L36146-A2053-D	Con.Cable Battery Install. Comfort GPS/rat C35/C35
L36158-A91-A10	Basemodule without key with Slim-Lumberg-Connector
L36158-A91-A13	Basemodule Voice with key with Lumberg-Connector
L36254-Z6-C95	Handsfree Microphone aktiv S45/ME45/C45/M50/MT50/C55
L36280-Z4-C404	Power Supply EU C55/S55/S57/A55/SL55
L36280-Z4-C405	Power Supply C55/S55/A55/SL55 UK
L36880-N3015-A123	Handset
L36880-N5601-A103	SyncStation DSC-500 C55/S55/S57/SL55
L36880-N5601-A104	Travel Charger EU C55/S55/S57/SL55/A55
L36880-N5601-A105	Travel Charger UK C55/S55/S57/A55/SL55
L36880-N5601-A106	Car Charger C55/S55/S57/A55/SL55
L36880-N5601-A108	Headset PTT C55/S55/S57/A55/SL55
L36880-N5601-A109	Car Kit Portable C55/S55/S57/A55/SL55
L36880-N5601-A110	Data Cable Serial C55/S55/S56/S57/SL55
L36880-N5601-A111	Data Cable USB C55/S55/S57/SL55
L36880-N5601-A115	Travel Charger US C55/S55/S57/SL55
L36880-N5601-A118	Basic Car Pack C55/S55/S57/A55/SL55
L36880-S4501-A300	E-Box Carkit Voice II S45/ME45/M50/MT50/C45/C55/S55/SL55
L36880-S4501-A301	E-Box Carkit Voice S45/ME45/C45/M50/MT50/C55/S55/SL55
L36880-S4501-A302	E-Box Carkit Voice S45/ME45/C45/M50/MT50/C55/S55/SL55

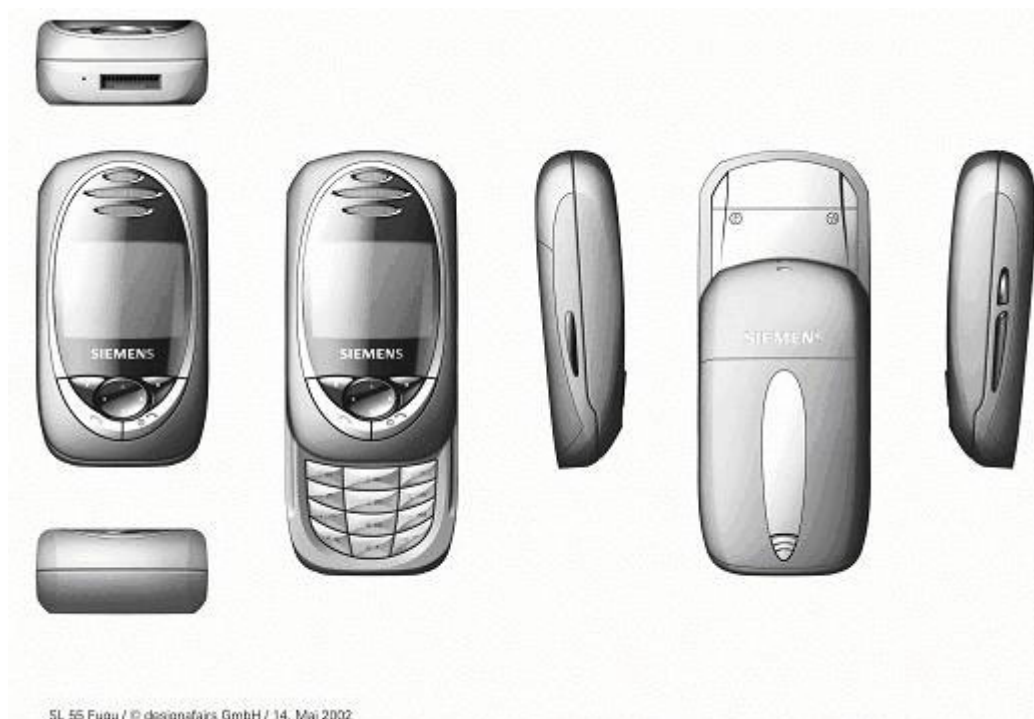
6 Unit Description SL55

SL55 is designed as a slider phone with a bridgeless keypad unit and colour display.

Full attention has been given to the front of the slider.

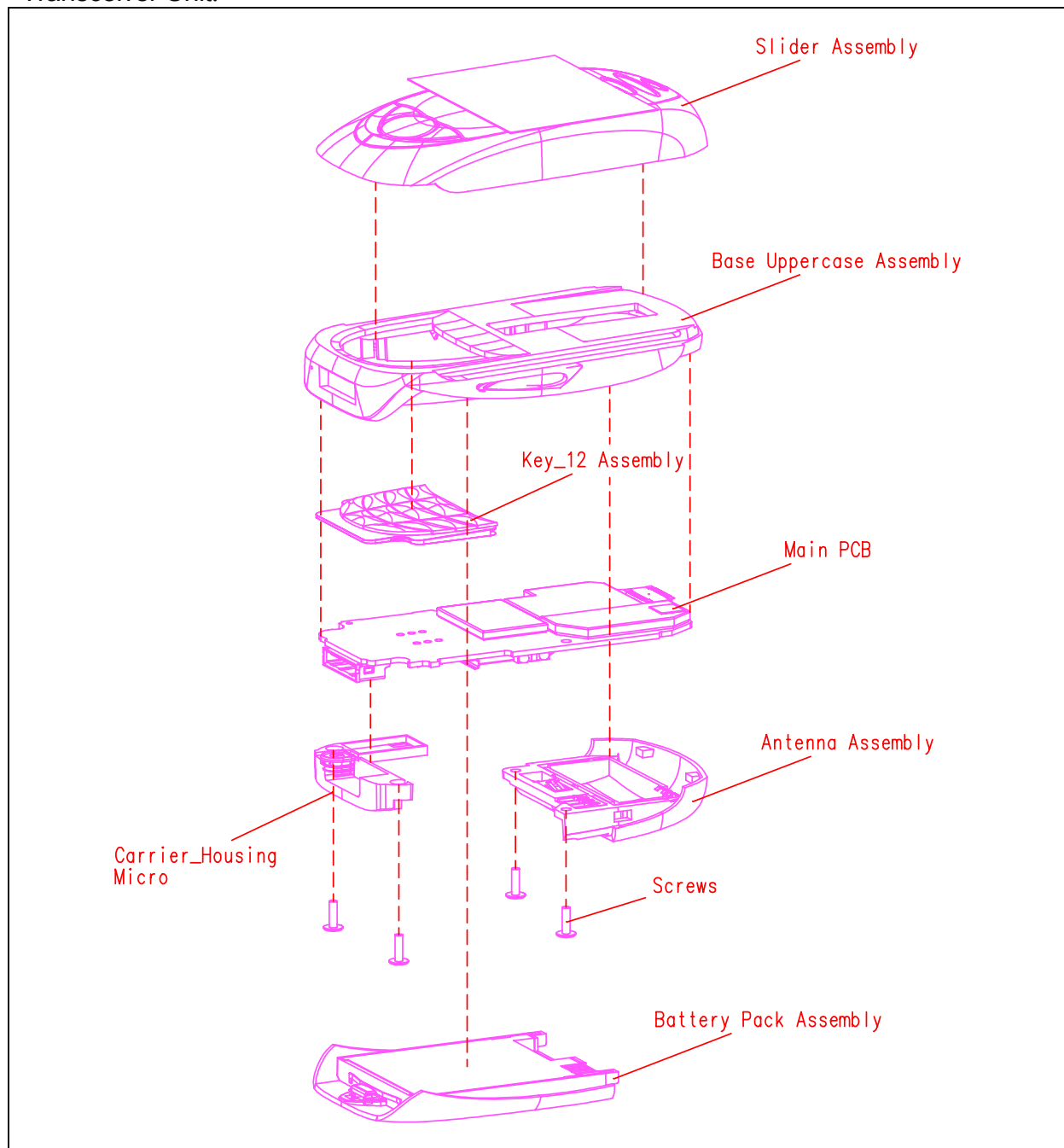
The display lens is decorated from outside with IMD and anti scratch protection and printed from the back. The metallic arc on the outside of the lens and the two ON/OFF keys describe a whole design frame.

After open the slider the new eye catcher is the bridgeless keypad with it different colour to the housing.

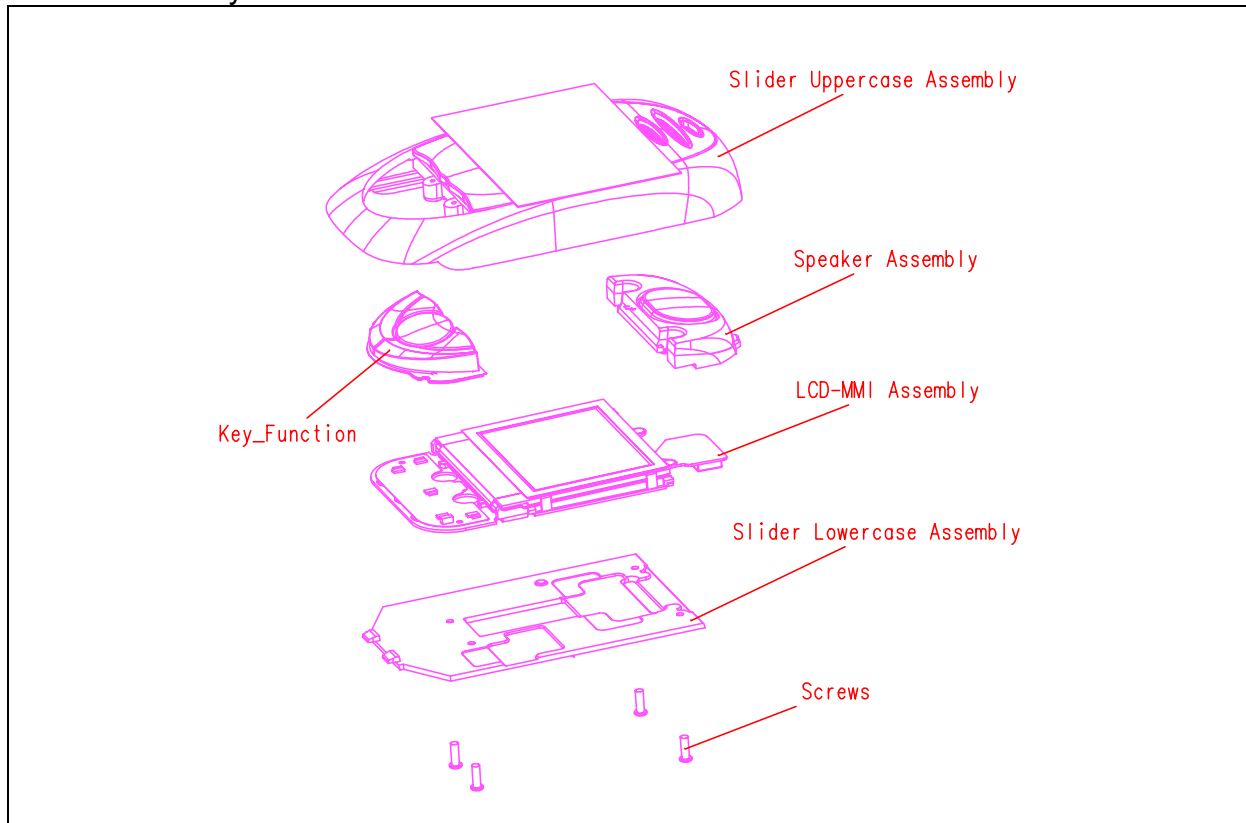


6.1 Exploded View of SL55

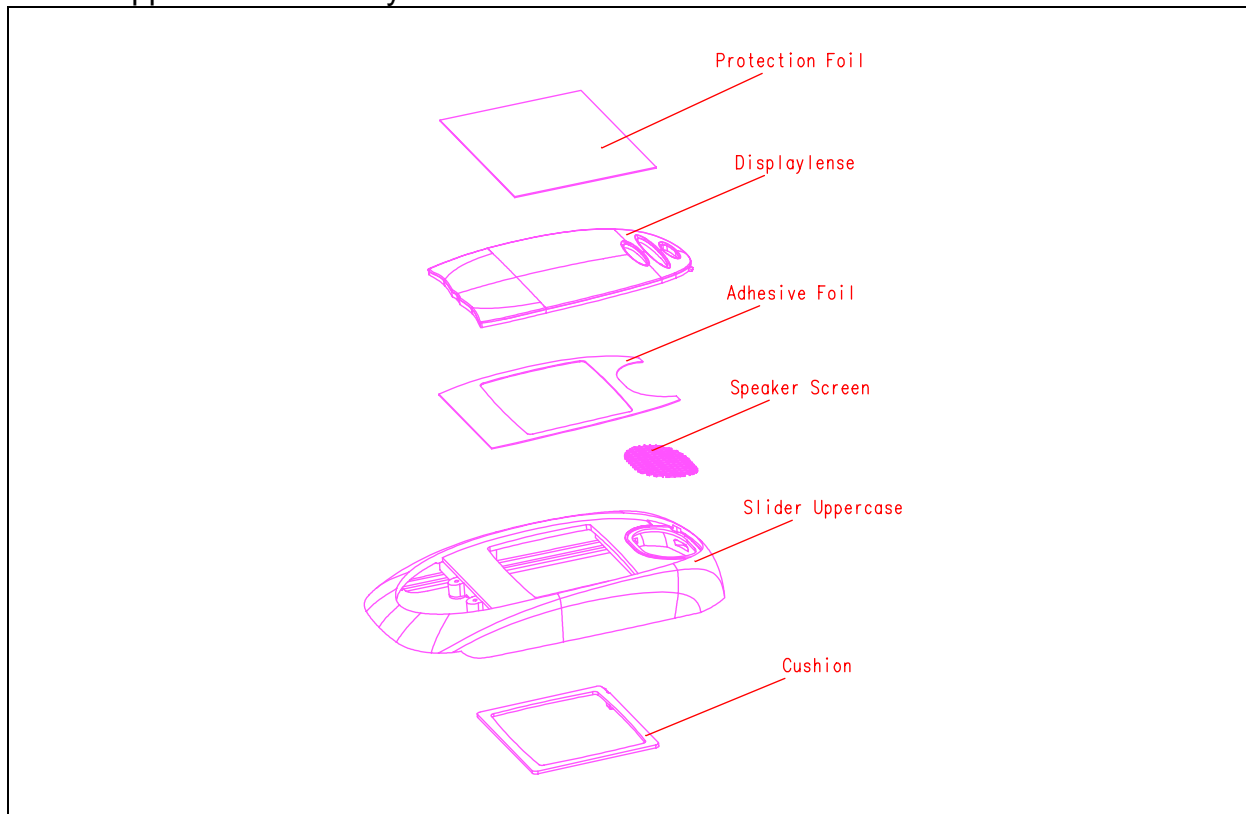
Transceiver Unit:



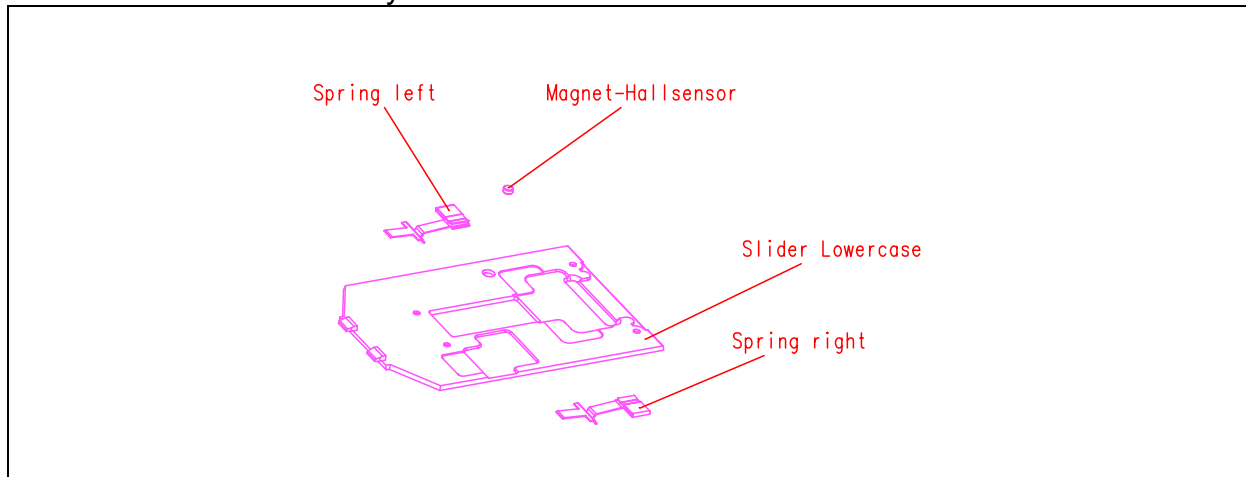
Slider Assembly:



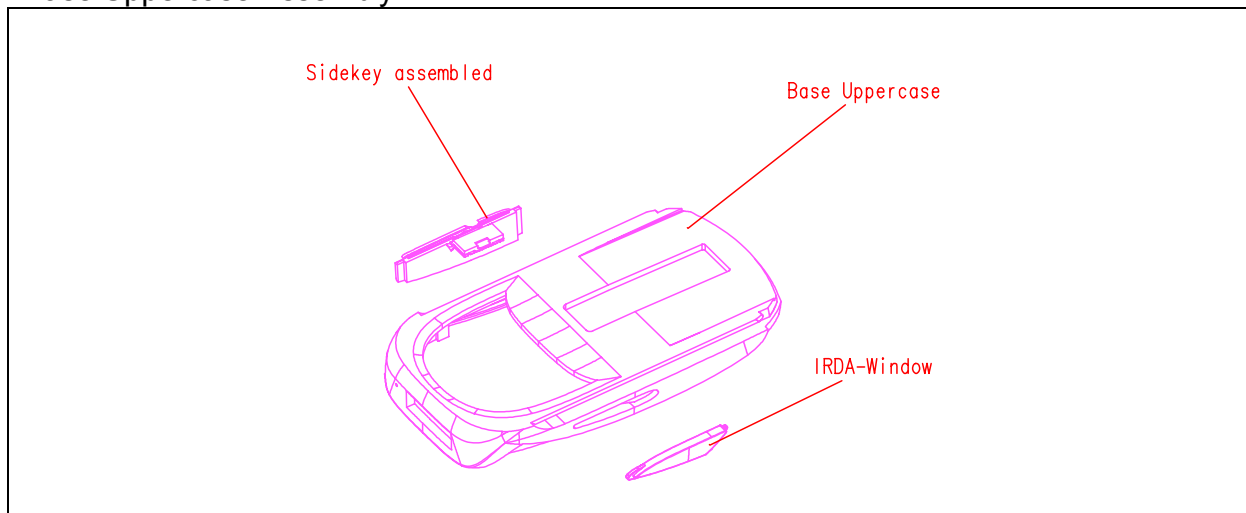
Slider Uppercase Assembly:



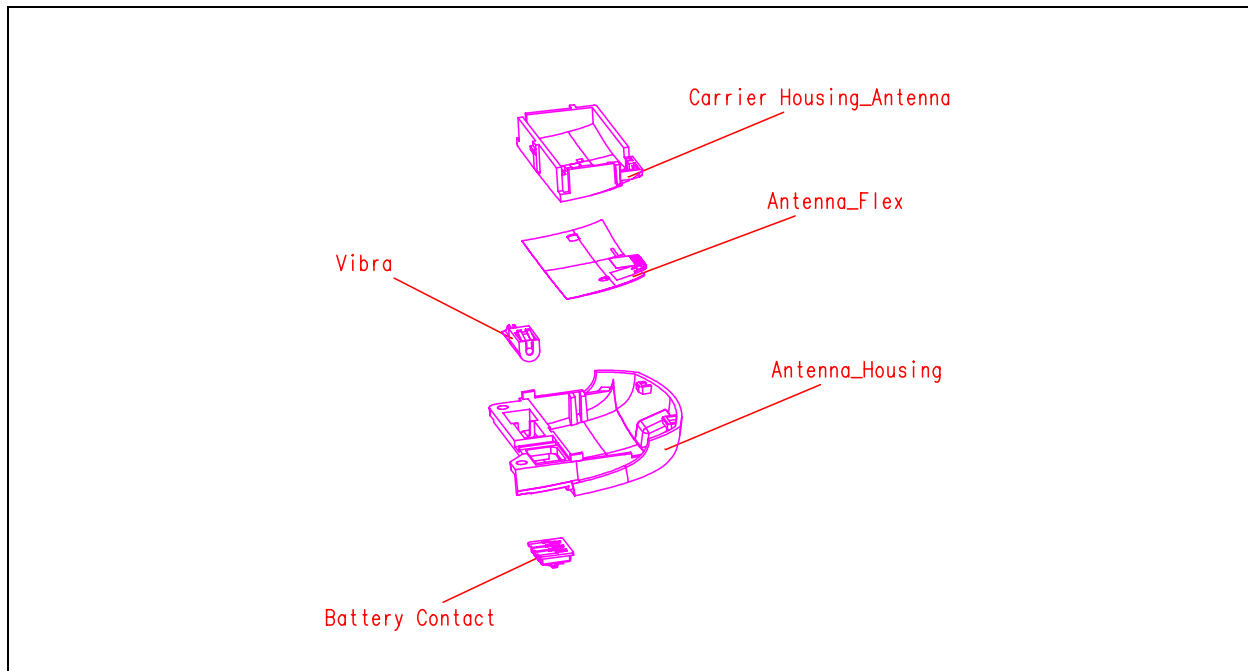
Slider Lowercase Assembly:



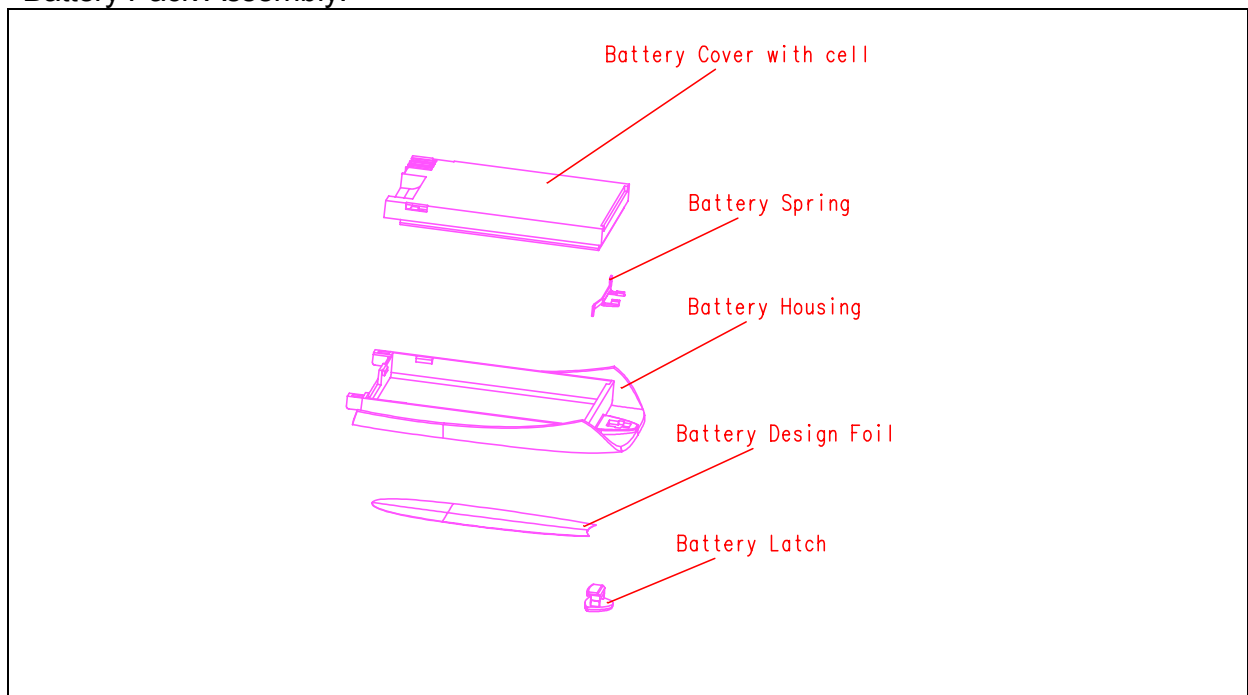
Base Uppercase Assembly:



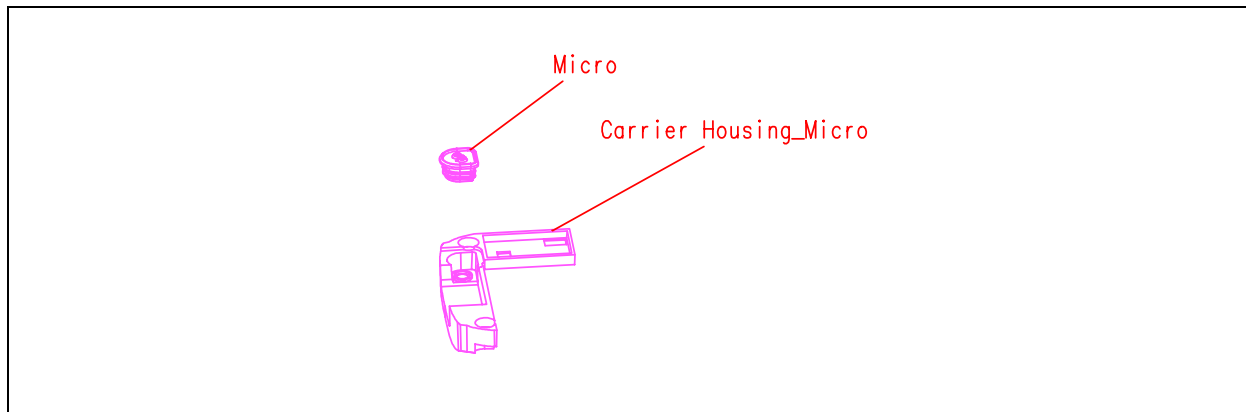
Antenna Assembly:



Battery Pack Assembly:



Carrier Housing Micro Assembly:







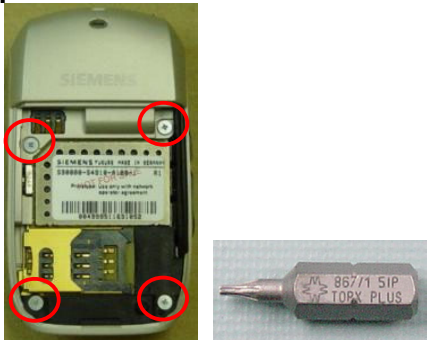

7 Disassembly of SL55

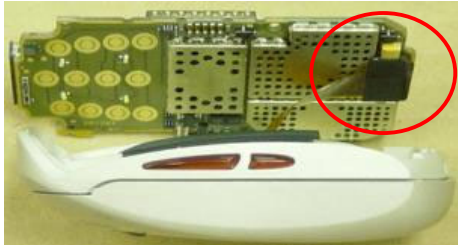

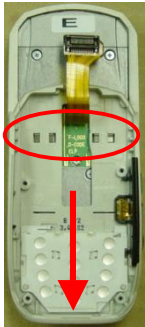
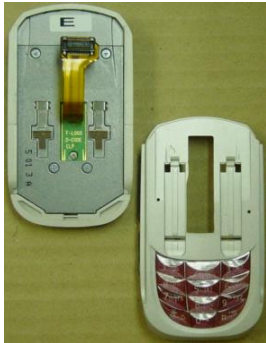
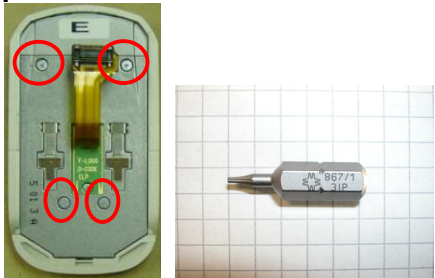
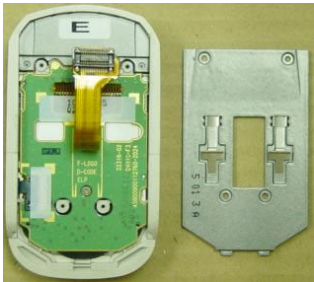
Note: ESD concept; the internal circuits will be more susceptible to ESD because of the use of exchangeable housing. The construction of the internal block must be/is designed, in the best possible way, to protect the circuit against sparks.

The keypad must be completely closed to prevent any occurrence of an ESD disruptive discharge.

The SIM contacts may be open, thus reachable for ESD contact discharge. This could lead to damage or destruction of the EGold pins.

It is a requirement for the service personnel to observe ESD protection rules while performing servicing the SL55.

<p>Step 1</p>  <p>Front view of the SL55</p>	<p>Step 2</p>  <p>Back View of the SL55</p>
<p>Step 3</p>  <p>Remove the back cover/battery by (1) pushing the catch and (2) lift the cover upwards as indicated by the arrows.</p>	<p>Step 4</p>  <p>To remove the SIM card, push the SIM card out from the SIM card holder as indicated by the arrow.</p>
<p>Step 5</p>  <p>To remove the Antenna Housing and Carrier</p>	<p>Step 6</p>  <p>The RF board can be seen after removing the</p>

<p>Housing Micro, unscrew the four screws as indicated with a Torx Plus 5IP tip screwdriver.</p>	<p>Antenna Housing and Carrier Housing Micro.</p>
<p>Step 7</p>  <p>To remove RF board from the Base Uppercase Assembly, detach the Flexi-cable connector from the RF board.</p>	<p>Step 8</p>  <p>The Key-12 Assembly can be seen after removing the RF board from the Base Uppercase Assembly.</p>
<p>Step 9</p>  <p>To separate the Base Uppercase from the Slider Uppercase, push the four catches inwards with a pair of tweezers and slide the Base Uppercase downwards.</p>	<p>Step 10</p>  <p>The Slider Lowercase can be seen attached on to the Slider Uppercase after the Base Uppercase is separated.</p>
<p>Step 11</p>  <p>To remove the Slider Lowercase, unscrew the four screws with a Torx Plus 3IP tip screwdriver.</p>	<p>Step 12</p>  <p>The LCD-MMI Assembly can be seen after removing the Slider Lowercase.</p>

Step 13



LCD-MMI Assembly and Key-Function disassembled from Slider Uppercase.

Step 14



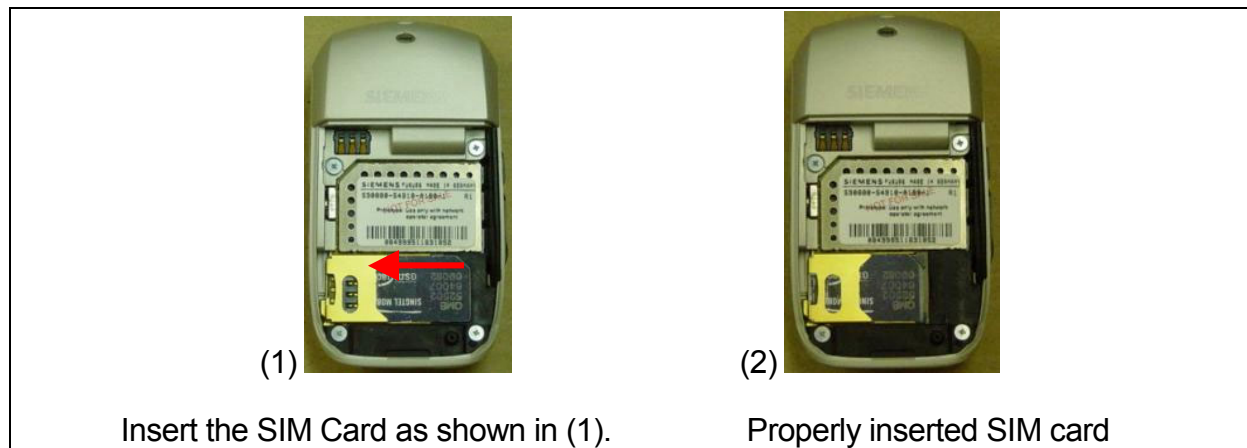
Fully disassembled SL55.

8 Reassembly of SL55

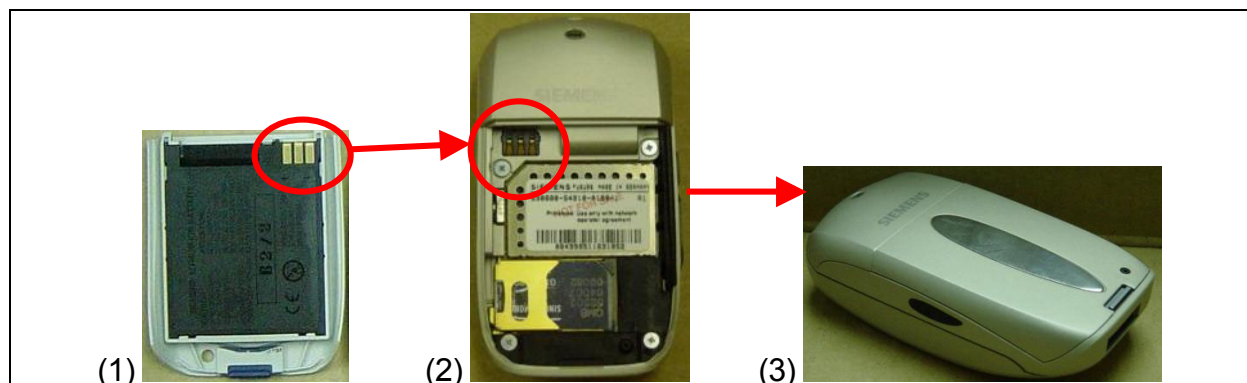
For the reassembly of the SL55, simply reverse the disassembly procedures from Step 14 to Step 1. However there are some areas to be taken note during reassembling of the phone.

The torque for the screwdriver should be set at 9Ncm while tightening the Torx Plus 3IP screws and 12Ncm for the Torx Plus 5IP screws.

During the installation of the SIM card, make sure that the golden contact area is facing backwards and that the SIM card is inserted properly in the SIM card holder.



During the installation of the battery, make sure that the battery contacts are properly placed before closing the back cover. (See picture below)



9 Mobile Software Programming

The common mobile software available is divided into language groups. However, this software does not contain the specific settings, such as ringing tones, greeting text, short dial list, etc. required by the operator(s) or service provider(s). Therefore, it is common to have some menu item(s) differ in different variants or are not visible at all. These settings are stored in different memory area of the mobile and will be activated depending on the customer specific model or variant of the phone by a separate test step during the production process.

Due to this separation of common mobile software and customer specific initialization, it is possible to fulfil the demands of the market requiring customization and flexibility. As a consequence the software programming process in the LSO is divided into two different steps as followed:

- Software update to actual version and appropriate language group.
- Programming of Customer Specific Initialization.

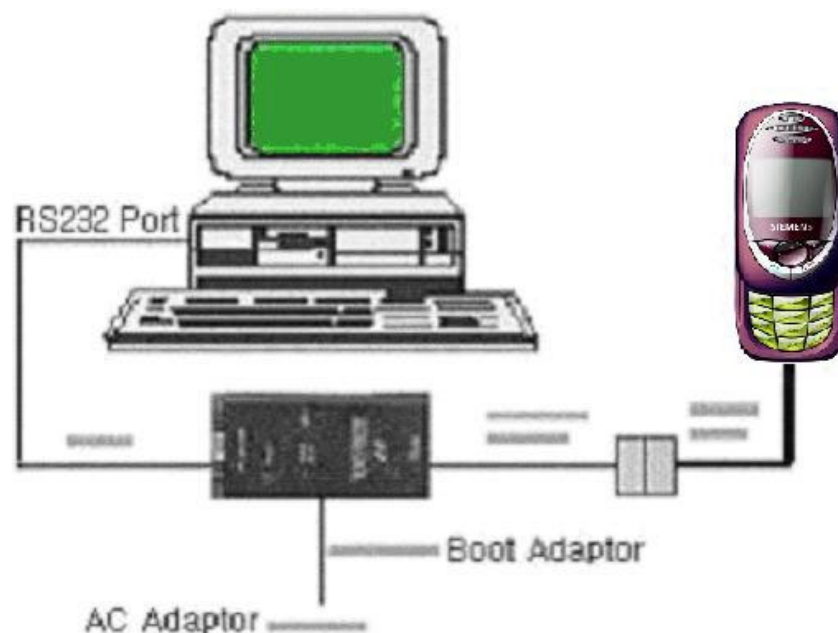


Figure 2. SL55 Software Programming Setup

10.1 Mobile Software Updating

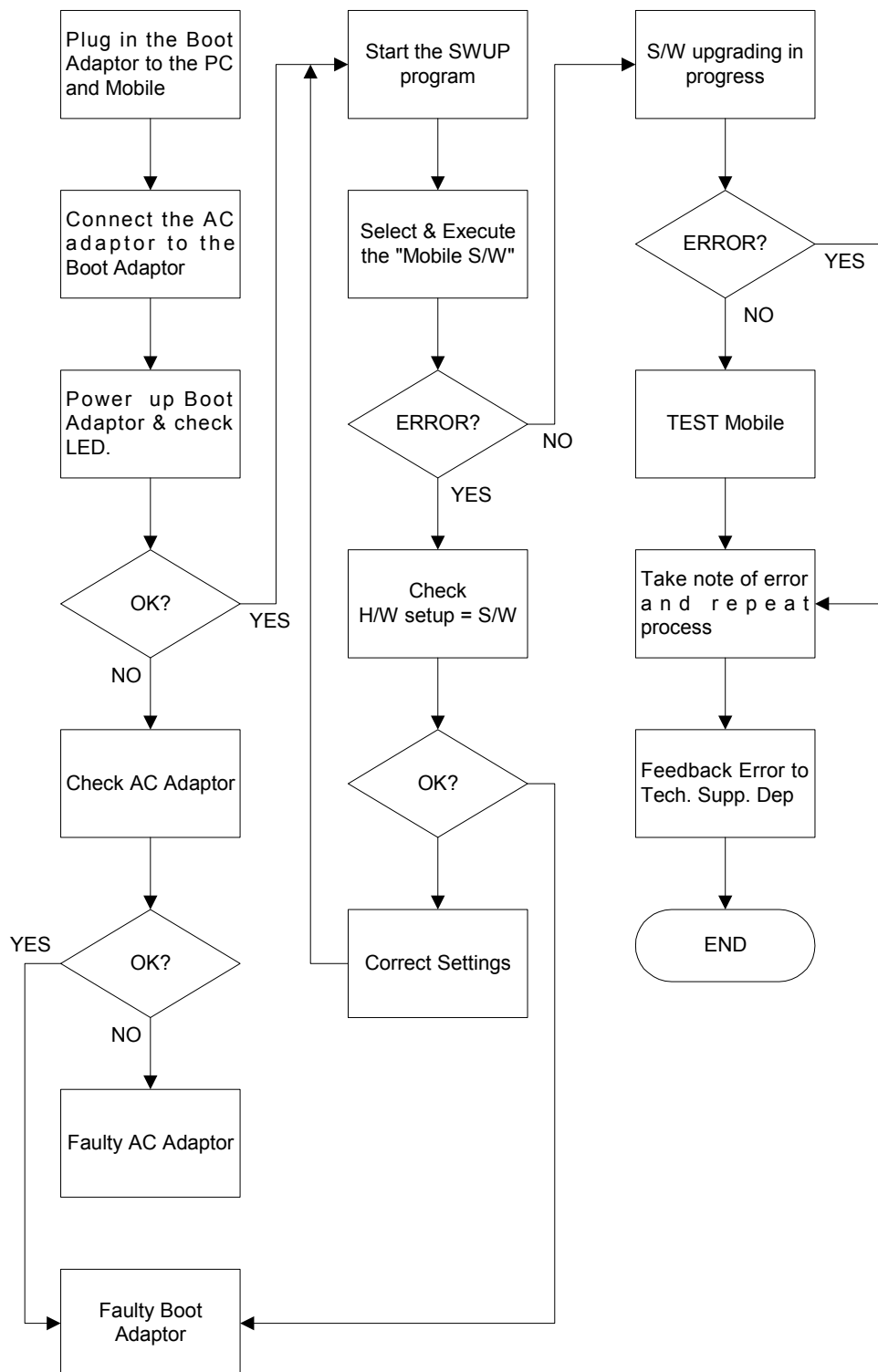
The software of the mobile, L55 series is loaded from a PC directly. Hardware interconnection between the mobile and the PC is shown in Figure 2.24 Because of the new type of external connector used in L55 series (Slim-Lumberg type) an additional adaptor cable between mobile and boot adaptor is required. Table 2.1 listed all the hardware requirements

If you use the battery dummy, make sure that the power supply voltage is correctly adjusted.

Description	Part No.
Bootadapter 2000 incl. AC-Adapter, serial cable and mobile connection cable	L36880-N9241-A200
IBM Compatible PC – Pentium	-
Adapter cable	F30032-P226-A1

TABLE 2.1 EQUIPMENT LIST FOR SOFTWARE PROGRAMMING

10.2 Flow Chart for Software Upgrading



FLOW CHART FOR S/W PROGRAMMING PROCESS

10 Siemens Service Equipment User Manual

Introduction

Every LSO repairing Siemens handset must ensure that the quality standards are observed. Siemens has developed an automatic testing system that will perform all necessary measurements. This testing system is known as:

Siemens Mobile Service Equipment

Using this system vastly simplifies the repair of the phones and will make sure that:

1. All possible faults are detected
2. Sets, which pass the test, will be good enough to return to customer.

Starting from the P35 Series, Siemens will introduce a simpler and faster testing platform for testing a repaired Siemens mobile phone. The testing platforms are either base on R&S CMD 53/55 or CTS55 GSM test set.

There is also test software under development for testing with the Wavetek 4201S and the 4107 GSM test set.

A Level 2.5 service software is also under development for more elaborate testing for the repair for the L55 series mobile phone.



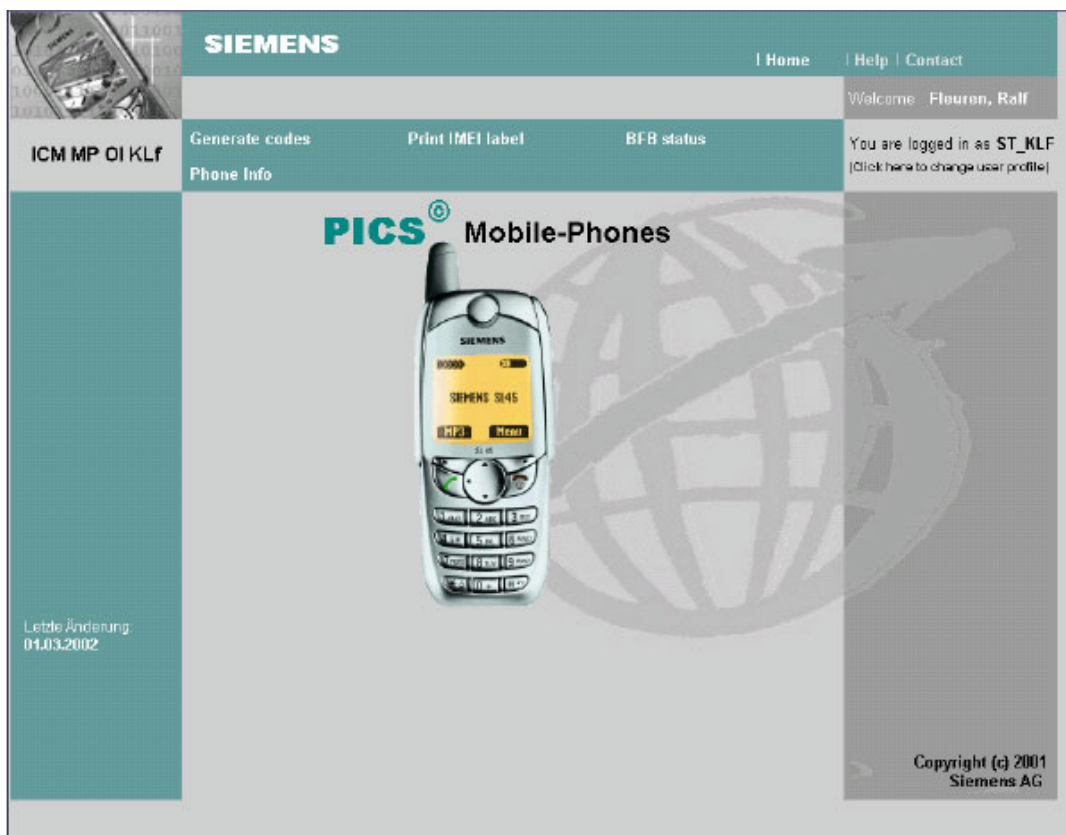
THE LSO WILL HAVE TO PURCHASE THE SYSTEM, CHOOSING BETWEEN THE COMPLETE PACKAGE OR SUB-SET OF IT.

A FULLY AUTOMATIC TEST PROCEDURE IS ONLY POSSIBLE IF THE COMPLETE SYSTEM IS INSTALLED.



Make sure that your CTS firmware is Version 3.01 or higher. For CMD 55 it must be Version 4.03 and higher. Please check with the Service Info SB_0500 for the CTS/CMD Hardware Options.

11 PICS Internet



Overview

The following functions are available for the LSO

- Generate **PINCODE**
- Generate **SIMLOCK-UNLOCK-Code**
- **Print IMEI labels**

The access to the server which is located in Kamp-Lintfort is protected and will only be granted to authorized users being supplied with a special coded chipcard.

Chipcards and the administration services of the PICS database are provided by *PICS-TRUST- Center* at department **ICP MP OI Kamp-Lintfort**.

In case of any questions or requests concerning chipcards or administration of the database please ask your responsible Siemens Customer Care Manager.

Installation for Windows 95 / 98 / NT / 2000

Requirements

In order to use the PICS-Internet websites you need a fully configured internet access with a 32bit NETSCAPE-Browser.

Remark:

Microsoft Internet Explorer and Netscape versions above 4.7x cannot be used!

There is a 90-day-trial-version of Netscapes Navigator 4.6 in English or German available on the PICS installation CD provided by Siemens.

Every user is responsible for a proper installation matching the license agreements.

For installation and further access you need the following:

1. The Installation-CD which contains:

- the SETUP program for the InterSEC plugin
- the **trial version** of Netscape Navigator 4.6 (German / English)
- the German / English documentation

2. A chipcard which is authorized by ICP MP OI KLF in order to decode the protected PICS Websites (and a password which gives you access to your chipcard). Chipcards can be ordered via your responsible Customer Care Manager within Siemens.

3. A supported chipcard reader (Smarty or Siemens B1) in order to access your chipcard.

Remark:

We recommend using the Siemens B1 reader. Similar device to B1 is Cardman 9010.

Generate Codes

In the module "**Generate Codes**" you can choose to generate:

- **Master - Phonecodes**

- **Simlock Unlock – Codes**

SIEMENS | Home | Help | Contact

Generate codes | Print IMEI label | BFB status

ICM MP CCQ KLF | Phone Info

Welcome Fleuren, Ralf

You are logged in as ST_KLF
(Click here to change user profile)

Generate Simlock-Codes or Master-Phonecodes

☒ Master-Phonecode
☐ Simlock-Unlock-Code

Reset input Retrieve code

Letzte Änderung:
26.03.2002

Copyright (c) 2001
Siemens AG

Master - Phonecodes

The **Master – Phonecode** is used to unlock blocked mobiles.

Master – Phonecodes can only be supplied for mobiles which have been delivered in a regular manner.

Master-Phonecode

IMEI-No.:	449197520214
Partnumber	S30880-S4100-A100-22
Delivery Note	DA62178875
Delivery Date (MM-DD-YYYY)	14.08.2000
Software version	005
Master Phonecode	*#0003*11564237#

New query

Simlock Unlock - Code

The **Simlock-Unlock-Codes** can only be generated if the following conditions are given:

- Mobile must have an active **Simlock** inside.
- The user must be given the authorization to obtain **Simlock Unlock- Codes** for the variant of the operator to which the mobile was delivered last time.



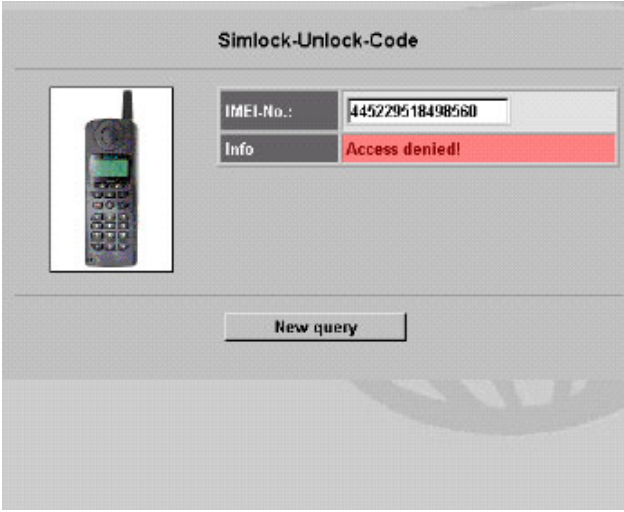
Simlock-Unlock-Code

IMEI-No.:	445229518498560
Partnumber	S24859-C2700-A20-10
Delivery Note	290/01870
Delivery Date (MM-DD-YYYY)	03.05.1996
Software version	445229518498560
Network-Code	19246230
Network Master-Code	*#0000*06944218#
Serv.Provider-Code	89092430
Serv.Provider.Master-Code	*#0001*19919834#

New query

Hint:

If there's no such authorization you'll get the following screen:



Simlock-Unlock-Code

IMEI-No.:	445229518498560
Info	Access denied!

New query

In this case please contact your responsible Siemens Customer Care Manager.

Printing IMEI label

The module “**Print IMEI label**” offers the possibility to print IMEI labels for mobiles again.

SIEMENS

Home | Help | Contact

Print IMEI label

Welcome: Fleuren, Ralf

You are logged in as ST_KLF
(Click here to change user profile)

ICM MP OI KLF

Generate codes | **Print IMEI label** | BFD status

Phone Info

Print IMEI labels

No.	IMEI	No.	IMEI
1.		2.	
3.		4.	
5.		6.	

Test printer: ☒ Yes ☐ No

Reset input | Print label


Letzte Änderung: 01.03.2002

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You are able to print up to six labels in just one step.

To prevent that misaligned labels are being printed, the setting "test printer = Yes" is activated as default. After having printed a well-aligned test label you can switch setting to "No" and print the correct label.

Print IMEI label

 No image available	IMEI-No.	445229517351130
	Product type	S3COM
	Status	Ok
	IMEI-No.	499999410000260
	Product type	
	Status	Unknown TACFAC!

Hint:

For correct printing of IMEI labels you must have a **Zebra – label printer** with special material that fits for label printing. This printer has to be connected to local LPT1

printer port (also see Installation of IMPRINT) and MUST feature a printing resolution of 300dpi.

12 IMEI (International Mobile Equipment Identity)

The mobile equipment is uniquely identified by the International Mobile Equipment Identity, IMEI, which consists of 15 digits. Type approval granted to a type of mobile is allocated 6 digits. The final assembly code is used to identify the final assembly plant and is assigned with 2 digits. 6 digits have been allocated for the equipment serial number for manufacturer and the last digit is spare.

The part number for the C45 is S30880-S5100-Axxx where the last 4 letters specify the housing and software variant.

C45 series IMEI label is accessible by removing the battery.

Re-use of IMEI label is possible by using a hair-dryer to remove the IMEI label.

On this IMEI label, Siemens has also includes the date code for production or service, which conforms to the industrial standard DIN EN 60062. The date code comprises of 2 characters: first character denotes the Year and the second character denotes the Month. For example, the IMEI above show date code **M3**.

Year	Date Code	Month	Date Code
1999	L	December	D
2000	M	January	1
2001	N	February	2

TABLE 2.3 DIN EN 60062 DATE CODE

To display the IMEI number, exit code and SW/HW version, key: ***#06#**.

13 General Testing Information

General Information

The technical instruction for testing GSM mobile phones is to ensure the best repair quality.

Validity

This procedure is to apply for all from Siemens AG authorized level 2 up to 2.5e workshops.

Procedure

All following checks and measurements have to be carried out in an ESD protected environment and with ESD protected equipment/tools. For all activities the international ESD regulations have to be considered.

Get delivery:

- Ensure that every required information like fault description, customer data a.s.o. is available.
- Ensure that the packing of the defective items is according to packing requirements.
- Ensure that there is a description available, how to unpack the defective items and what to do with them.

Enter data into your database:

(Depends on your application system)

- Ensure that every data, which is required for the IRIS-Reporting is available in your database.
- Ensure that there is a description available for the employees how to enter the data.

Incoming check and check after assembling:

!! Verify the customers fault description!!

- After a successful verification pass the defective item to the responsible troubleshooting group.
- If the fault description can not be verified, perform additional tests to save time and to improve repair quality.
 - Switch on the device and enter PIN code if necessary unblock phone.
 - Check the function of all **keys** including **side keys**.
 - Check the **display** for error in line and row, and for illumination.
 - Check the **ringer/loudspeaker** acoustics by individual validation.
 - Perform a **GSM Test** as described on page 30.

Check the storage capability:

- Check internal resistance and capacity of the battery.
- Check battery charging capability of the mobile phone.
- Check charging capability of the power supply.
- Check current consumption of the mobile phone in different mode.

Visual inspection:

- Check the entire board for liquid damages.
- Check the entire board for electrical damages.
- Check the housing of the mobile phone for damages.

SW update:

- Carry out a software update and data reset according to the master tables and operator/customer requirements.

GSM Test:

- Connect the mobile/board via internal antenna (antenna coupler) and external antenna (car cradle) to a GSM tester.
- Use a Test SIM.
- Skip GSM 900/GSM1800 or GSM1900 test cases if not performed by the mobile phone.

Internal Antenna			
Test case	Parameter	Measurements	Limits
1 Location Update	<ul style="list-style-type: none"> • GSM900 • BS Power = -55 dBm • middle BCCH 	<ul style="list-style-type: none"> • Display check 	<ul style="list-style-type: none"> • individual check
2 Call from BS	<ul style="list-style-type: none"> • low TCH • PCL 5 • BS Power = -55 dBm • middle BCCH 	<ul style="list-style-type: none"> • Ringer/Loudspeaker check 	<ul style="list-style-type: none"> • individual check
3 TX GSM900	<ul style="list-style-type: none"> • low TCH • PCL 5 • BS Power = -55 dBm • middle BCCH 	<ul style="list-style-type: none"> • Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template 	<ul style="list-style-type: none"> • GSM Spec.
4 Handover to GSM1800 Including Handover Check			
5 TX GSM1800	<ul style="list-style-type: none"> • low TCH • PCL 0 • BS Power = -55 dBm • middle BCCH 	<ul style="list-style-type: none"> • Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template 	<ul style="list-style-type: none"> • GSM Spec.
6 Handover to GSM1900 Including Handover Check			
7 TX GSM1900	<ul style="list-style-type: none"> • low TCH • PCL 0 • BS Power = -55 dBm • middle BCCH 	<ul style="list-style-type: none"> • Frequency Error • Phase Error RMS • Phase Error Peak • Average Power • Power Time Template 	<ul style="list-style-type: none"> • GSM Spec.
8 Call release from BS			

External Antenna			
Test case	Parameter	Measurements	Limits
9 Call from MS	<ul style="list-style-type: none"> GSM900 high TCH PCL 6 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Keyboard check 	<ul style="list-style-type: none"> individual check
10 TX GSM900	<ul style="list-style-type: none"> high TCH PCL 6 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
11 RX GSM900	<ul style="list-style-type: none"> high TCH BS Power = -102 dBm 50 Frames middle BCCH 	<ul style="list-style-type: none"> RX Level RX Qual BER Class Ib BER Class II BER Erased Frames 	<ul style="list-style-type: none"> GSM Spec.
12 Handover to GSM1800 Including Handover Check			
13 TX GSM1800	<ul style="list-style-type: none"> high TCH PCL 1 BS Power = -55 dBm middle BCCH 	<ul style="list-style-type: none"> Frequency Error Phase Error RMS Phase Error Peak Average Power Power Time Template 	<ul style="list-style-type: none"> GSM Spec.
14 RX GSM1800	<ul style="list-style-type: none"> high TCH BS Power = -102 dBm 50 Frames middle BCCH 	<ul style="list-style-type: none"> RX Level RX Qual BER Class Ib BER Class II BER Erased Frames 	<ul style="list-style-type: none"> GSM Spec.
15 Call release from MS			

16 Handover to GSM1900 Including Handover Check			
17 TX GSM1900	<ul style="list-style-type: none">• high TCH• PCL 1• BS Power = -55 dBm• middle BCCH	<ul style="list-style-type: none">• Frequency Error• Phase Error RMS• Phase Error Peak• Average Power• Power Time Template	<ul style="list-style-type: none">• GSM Spec.
18 RX GSM1900	<ul style="list-style-type: none">• high TCH• BS Power = -102 dBm• 50 Frames• middle BCCH	<ul style="list-style-type: none">• RX Level• RX Qual• BER Class Ib• BER Class II• BER Erased Frames	<ul style="list-style-type: none">• GSM Spec.
19 Echo Test	<ul style="list-style-type: none">• high TCH• PCL 1• BS Power = -70 dBm• middle BCCH		<ul style="list-style-type: none">• individual check

Final Inspection:

The final inspection contains:

- 1) A 100% network test (location update, and set up call).
- 2) Refer to point 3.3
- 3) A random sample checks of:
 - Data reset (if required)
 - Optical appearance
 - Complete function
- 4) Check if PIN-Code is activated (delete the PIN-Code if necessary).

Basis is the international standard of **DIN ISO 2859**.

Use Normal Sample Plan Level II and the Quality Border 0,4 for LSO.

Remark: All sample checks must be documented.

Annex 1

Test SIM Card

There are 2 different “Test-SIM-Cards” in use

a) Test SIM from the company “**ORGA**”

Pin 1 No: 0000
PUK 1: 12345678

Pin 2 No: 0000
PUK 2: 23456789

b) Test SIM from the company “**T-D1**”

Pin 1 No: 1234
PUK 1: 76543210

Pin 2 No: 5678
PUK 2: 98765432

Annex 2

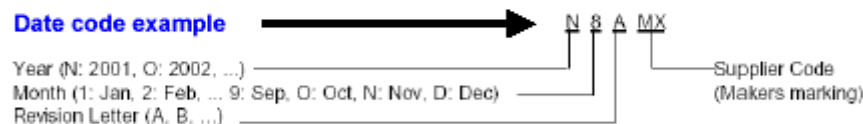
Battery – Date – Code overview

Date Code overview

Varta



Hitachi / Maxell



Sanyo



NEC



Panasonic



Sony

